

# Functional and radiological outcome of using short segment pedicle instrumentation with intermediate screw constructs in unstable thoracolumbar burst fractures: a pilot study

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## INTRODUCTION

- ❖ Thoracolumbar region is prone to fractures due to transition of force between rigid thoracic kyphosis and mobile lumbar lordosis.(1)
- ❖ Unstable thoracolumbar burst fractures include : loss of more than 50% of anterior vertebral height, kyphotic deformity more than 30° and patient with Neural deficit.
- ❖ Short segment pedicle instrumentation being used earlier but associated with loss of kyphosis correction, subsequently long segment pedicle instrumentation also being used , but associated with fusion of more motion segments and stiffness.
- ❖ However, short segment pedicle instrumentation with intermediate fixation (screw in fractured vertebra) fuses less motion segments with better correction of kyphosis.
- ❖ As not many studies have been reported on this , hence, the need for the study.

## AIM & OBJECTIVES

Aim is to assess functional and radiological outcome of using short segment pedicle instrumentation with intermediate screw constructs in unstable thoracolumbar burst fractures.

Primary Objectives: Functional quality of life measured by Oswestry Disability Index(ODI); Radiological outcome: I. Correction and maintenance of kyphotic deformity II. Correction and maintenance of anterior vertebral height. Secondary objectives: Relief of pain (by VAS); Neurological recovery (Frankel grading).

## MATERIALS AND METHODS

SETTING: Department of Orthopaedics, UCMS & GTB Hospital, Delhi.

DURATION: September 2018 to April 2020.

TYPE OF STUDY: Prospective study .

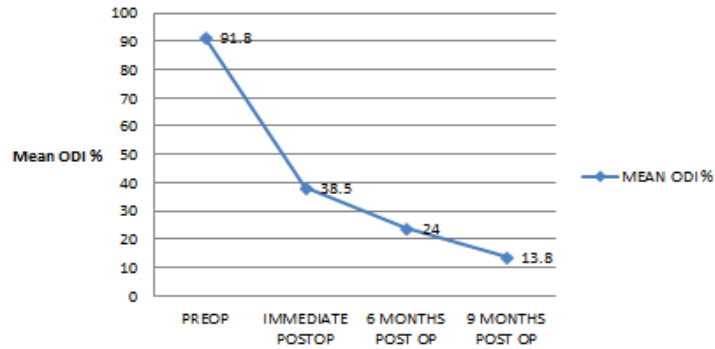
SAMPLE SIZE: 15(Pilot study) .

INCLUSION CRITERIA:Age:18-50 yrs , both sexes ,traumatic unstable thoracolumbar fractures, the time from trauma to surgery  $\leq$  3 weeks.

EXCLUSION CRITERIA: Fracture dislocations, pathological fractures, patients not willing to participate in study, pregnant and lactating females.

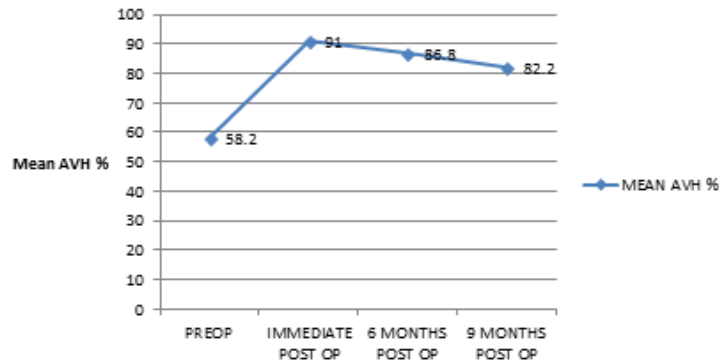
# RESULTS

### MEAN ODI %



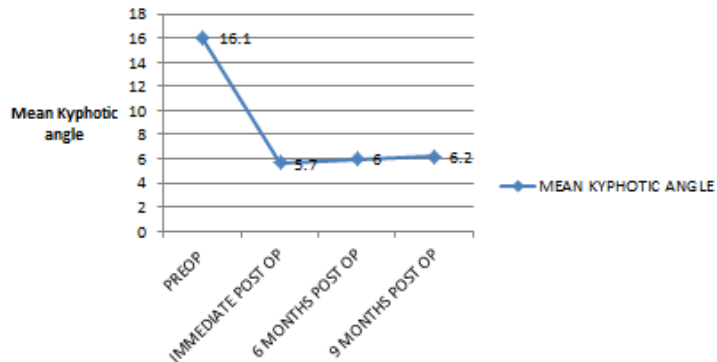
Constant improvement in ODI score from 91.8%(pre-op) to 13.8%(9 month post-op).

### MEAN AVH %



Correction of mean AVH from 58.2%(pre-op)to 91%(immediate postop)with minimal loss of 8.8%to 82.2%(9 month post-op)

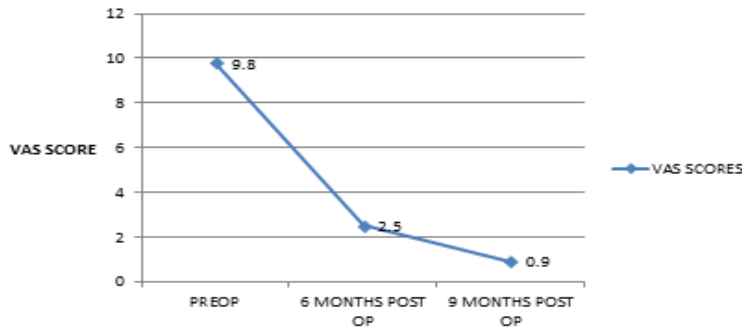
### MEAN KYPHOTIC ANGLE ( COBB'S METHOD)



Correction of mean kyphotic angle from 16.1°(pre-op)to 5.7°(immediate post-op)with minimal loss of 0.5° to 6.2°(9 month post-op)

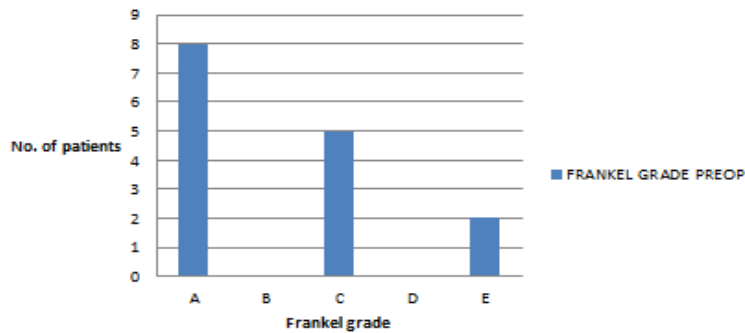
# RESULTS

### VAS SCORES

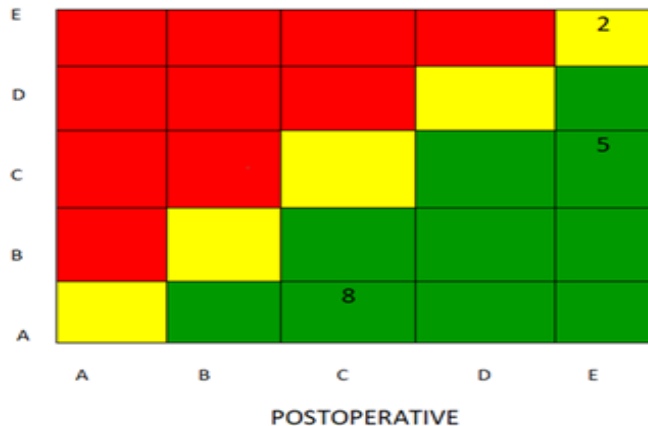


Constant improvement in Vas score from 9.8(pre-op) to 0.9 (9 month post-up)

### FRANKEL GRADE PREOP



Out of 15 cases, 8 cases had Frankel grade A, 5 cases had Frankel grade C, while 2 had no deficit. All patients with Frankel grade A improved to grade C, all 5 patients with Frankel grade C improved to Frankel grade E, 2 patients with no neural deficit remained neurally intact



## DISCUSSION/SUMMARY

1. In this study, we could achieve statistical difference between mean preoperative and immediate postoperative values of anterior vertebral height and kyphotic angle, however, minimal loss of correction of anterior vertebral height and kyphosis between immediate postoperative and 9 month postoperative values was found to be not significant.
2. Constant improvement in ODI, VAS score and improvement in neural status by at least one Frankel grade could be achieved.
3. Findings of the study were similar to Kanna et al(2) and better in comparison to Liao et al(3) and Hak Sun Kim et al(4).

## REFERENCES

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